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SOUTHWESTERN PLANTS.

LESLIE N. GOODDING.

EARLY in the season of 1902 the writer visited the southern part of Nevada and Utah for the purpose of securing as large a representation of the flora as possible. On arriving at Calientes, the extreme southern point of the Oregon Short Line at that time, in the latter part of April, it was found that the plants were not yet in condition to collect. On that account the trip was extended southward along Meadow Valley Wash, the Muddy, and the Virgin to the Colorado River. From thence return was made along the Virgin to St. George, Utah, and directly across to Modena, Utah. Calientes was again visited and collections made of plants that had now come into condition. Returning northward through Utah, stops were made at every convenient point on the railroad, from which visits were made to some of the desert portions of central Utah and to several localities in the Wasatch Mountains. Leaving the railroad at Carter, Wyoming, with camp outfit, and traveling southward, the final work of the trip was done in the Uintah Mountains and on their southern slopes. Three weeks were spent here, and proved as profitable as any of the twelve that were spent in the field.

A large amount of material was secured, and among the several hundred species are many of great interest, either because of their meager representation in the herbaria, or because they are poorly understood, or finally because they have heretofore wholly escaped recognition. A discussion of a few of these is submitted in this paper.

CENTROSTEGIA Gray, DC. Prod. 14:27; Pacif. R. Rep. 7:19.

C. CRYPTANTHA (Curran); *Chorizanthe Thurberi cryptantha* Curran, Bull. Cal. Acad. 1: 275.

C. LEPTOCERAS Gray, Proc. Am. Acad. 8: 192; *Chorizanthe leptoceras* Wats., Proc. Am. Acad. 12: 269.

C. THURBERI Gray, DC. Prod. **14**: 27; Pacif. R. Rep. **12**: 19; *Chorizanthe Thurberi* Wats., Proc. Am. Acad. **12**: 269.

The validity of the genus *Centrostegia* can hardly be questioned when one has both plants and descriptions at hand. The spurs on the involucre are so characteristic that the genus might well stand on these alone.

Eriogonum revolutum, n. sp.—Perennial, the low woody base rather intricately branched, the upright branchlets 7–10^{cm} long: leaves thick, linear, so strongly revolute as to be nearly terete, obtuse or acutish, 8–15^{mm} long, softly pubescent above, more densely so below, short petioled, fascicled near the ends of the branchlets: peduncles 5–8^{cm} long, slender, pubescent, leafy at the base only: involucre pubescent, short peduncled, in a compact head, turbinate, strongly 5-nerved and toothed, 10–20-flowered: bracts linear, scarcely exceeding the involucre; pedicels 4–5^{mm} long: calyx pubescent, pink, campanulate, slightly constricted in the middle, outer lobes oblong-oval, inner slightly narrower.

This excellent species is apparently not closely related to any described species, but undoubtedly belongs in § 3 of Watson's revision, Proc. Am. Acad. **12**: 262.

Collected by the writer in the mountains south of Bunkerville, Nevada (no. 753).

Cerastium variabile, n. sp.—A perennial cespitose herb with many erect stems 15–25^{cm} long, viscid pubescent throughout: leaves subcoriaceous, exceedingly variable in shape and size; the lower ones oblong-clavate, obtuse, 1–1.5^{cm} long; upper ones from narrowly oblong-linear to ovate-lanceolate, mostly acute, one-fourth to one-half the length of the internodes: sterile shoots very few, with internodes usually exceeding the oblong-linear acute leaves: flowers 5–12, in an elongated open cyme; the lower pedicels much elongated (often 25^{cm} long); upper ones considerably shorter, erect or recurved: the thick sepals narrowly oblong, acutish, 6–7^{mm} long, narrowed abruptly into a thin scarious margin and tip: petals 1–2^{mm} longer than the calyx, narrowly obcordate except for being *deeply* two-cleft: capsule one and a half times as long as the calyx, distinctly curved.

This very variable plant is most closely related to Dr. Greene's *C. occidentale*, from which it is easily distinguished by its more compactly cespitose

bunches with very few sterile shoots, by its remarkably viscid pubescence, elongated cymes, broader and thicker calyx lobes, and much shorter and more deeply cleft petals.

Collected by the writer in the Uintah Mountains, Utah (no. 1246), where it grew in some profusion.

Draba valida, n. sp.—Perennial with a tap root: stem usually single but much branched from the base; stem and branches somewhat rigidly erect, the main stem 1.2–2^{dm} high, exceeding the branches by 4–5^{cm}; rather finely hirsute throughout: basal leaves numerous, 1.5–2^{cm} long, spatulate, obtuse, entire or coarsely toothed: stem leaves sessile, oblong, entire or occasionally coarsely two to four toothed, 1–1.5^{cm} long; calyx oblong, obtuse, 1.5–2^{mm} long, sparingly clothed externally with long hairs: petals white, oval to obcordate and attenuate at base, 2–3^{mm} long: pedicels erect, stout, 2–4^{mm} long: pods oblong, 4–7^{mm} long, clothed with short branched hairs: stigma almost sessile.

The type (no. 1402) of the above species was collected by the writer at Dyer Mines, Uintah Mountains, Utah.

AMELANCHIER RUBESCENS cinerea, n. var.—A peculiarly ashy-colored divaricate shrub, distinguishable from *A. rubescens* Greene by the much denser pubescence on the leaves and inflorescence, by the nearly obtuse oval leaves which are acutely serrate to the base, and by the shorter more broadly campanulate calyx with linear acute lobes.

Collected by the writer at St. George, Utah, May 13, 1902 (no. 780).

Cowania alba, n. sp.—A quite freely branched bush, 1.5–2.5^m high, with white bark and light colored wood: leaves 3–5-cleft at the ends and tapering to rather broad petioles, 8–11^{mm} long, dark green above, somewhat viscid and barely tomentose beneath, edges strongly revolute and resinous-dotted, crowded at the ends of small branchlets which are scaly from the persistent stipules of previous years: flowers white, about 15^{mm} in diameter: calyx tube very narrowly funnelform, clothed with short silvery pubescence, usually slightly resinous-dotted (not glandular-tipped pubescence), strongly veined; lobes narrowly oblong, obtuse, strongly net-veined, 3^{mm} long: petals oblong, obovate, very irregu-

lar in size and outline but usually long clawed: akenes normally two (rarely three), large, 8^{mm} long and 2^{mm} wide, with a prominent keel along the back; length of the tails unknown.

This elegant species cannot be said to be closely related to any other. The number and size of the akenes and the shape of the leaves are very characteristic.

Collected by the writer in the mountains south of Bunkerville, Nevada (no. 744).

Geranium longipes (Wats.).—Annual: stems usually simple below, branched above, one to several from the same root, sparingly strigose with short reflexed hairs; above, at the second or third whorl of leaves, the stem breaks up into three to six equal slender branches which in turn branch out into the two-flowered, much elongated, nearly filiform peduncles: pedicels slender and elongated; peduncles and pedicels quite densely glandular-pubescent: leaves broadly reniform in outline, 3–5^{cm} wide, deeply 5–7-cleft nearly to the base, the divisions narrowly lobed; radical leaves numerous, on slender petioles, 10–15^{cm} long: flowers white or pinkish, 2.5–3^{cm} in diameter: sepals narrowly oblong, ciliate, pubescent on the prominent veins, terminating in a long awn: petals a little shorter than the sepals, narrowly obcordate, deeply triangulate-notched: lobes of the ovary coarsely strigose-pubescent; filaments persistent, as long as the lobes of the ovary; beak 2^{cm} long, rather long-pointed: seeds oblong, pitted.

It is apparent from the meager description of *G. carolinianum longipes* Wats. that it must have been drawn from inadequate material. The "usually solitary peduncle" of Mr. Watson's description is true of occasional western plants, but these can by no means be separated from the other western forms. All the western material I have seen (except one specimen of true *G. carolinianum* from Idaho, which was doubtless an introduction) has the elongated peduncles and pedicels, and this has led me to think that all our western material comes under Dr. Watson's *G. carolinianum longipes*. The character of the pubescence as well as the elongated peduncles and pedicels, together with such minor points as the narrower calyx lobes, longer point on the beak, etc., easily separate the western plant from the eastern.

The writer's no. 1395 from the Uintah Mountains, Utah, is considered typical.

Rhus macrothyrsa, n. sp.—A tree-like shrub 1.5–2.5^m high, with glabrous stems (except the base of the young shoots which

are clothed with a thick, light brown, woolly pubescence): leaves 20–25^{cm} long; rachis terete or often angled, with a narrow dorsal canescent line; leaflets 9–15, glabrous and green above and below, oblong-lanceolate, acuminate, acutely serrate, sessile: fruiting thyrsa 15–25^{cm} long, open and quite strongly recurved; the rachis and its branches clothed with a rather coarse persistent pubescence; its branches often 8^{cm} long, ascending, subtended in the young thyrsa by linear bracts 5–20^{mm} long: drupe slightly laterally compressed, about 3^{mm} in diameter, clothed with short, light red pubescence: stone nearly globular and smooth.

R. macrothyrsa is most closely related to *R. glabra*, from which it can readily be distinguished by its dark green leaves which are not at all glaucous on either side, and its long open recurved thyrsa.

Collected by the writer (no. 988) at Calientes, Nevada.

***Rhus utahensis*, n. sp.**—Shrub 1–1.5^m high, diffuse, rather slender: leaves simple, suborbicular or subreniform, truncate at base, coarsely and somewhat evenly crenate, 1.3–2^{cm} long: petioles terete, minutely pubescent, 4–8^{mm} long: inflorescence few-flowered: drupes rather large, 5–8^{mm} in diameter, clothed with a short pubescence.

R. utahensis is apparently the *R. canadensis simplicifolia* Greene, which name is untenable, however, on account of *R. simplicifolia* Salisb. *R. utahensis* is well worthy of specific rank, as it is very distinct from *R. trilobata*, its nearest ally.

Collected by the writer (no. 832) in Diamond Valley, Utah.

***Apocynum nevadense*, n. sp.**—Glabrous throughout, stem 1–1.5^m high, freely branched above, the paired lateral branches far surpassing the central stem: leaves very smooth, subglaucous below, slightly darker above: the cauline sessile, semiclasping at base, 5–12^{cm} long, 2.5–4.5^{cm} wide, perfectly oblong, decidedly obtuse but tipped with a minute cusp, cordate at base; the rameal elliptic, acute, strongly mucronate, tapering below to the short petiole: cymes 1–3, usually terminal on the main stem, occasionally on the branches: peduncles 1–3^{cm} long; pedicels subtended by linear acute bracts: calyx segments linear-lanceolate: corolla white, cylindrical, exceeding the calyx segments by one-half: fruit 9–11^{cm} long.

This plant is probably most closely related to *A. oblongum* Greene, but

the sessile cordate semiclasping base of the cauline leaves and long fruits are distinguishing characters of *A. nevadense*.

The type no. 986, was collected at Calientes, Nevada, by the writer, May 29, 1902.

Cressa depressa, n. sp.—A depressed, spreading, many-branched, very leafy perennial 10–15^{cm} high, usually much broader, widely divaricately branched from the base up and canescently villous throughout: leaves oblong, subacute at both ends, subpetiolate, 5–10^{mm} long, 3–4^{mm} wide: flowers pediceled (pedicel 2–4^{mm} long) in the axils of the leaves, forming long narrow racemes, the branches being floriferous nearly to the base: calyx composed of 4 or 5 equal, oblong to nearly oval sepals 5^{mm} long, subtended by two small (usually half the length of the sepals) foliar bracts: tube of the corolla campanulate, the length of the sepals; lobes 5, oblong, subacute, reflexed, clothed exteriorly with long silky pubescence: filaments scarcely exerted, broadly subulate, inserted on the middle of the corolla tube and united a little below the insertion by their expanded bases, forming nectariferous pits: styles filiform, nearly twice the length of the corolla tube; ovary broadly ovate, copiously silky-lanate at summit, four-ovuled.

C. depressa is most closely related to *C. truxillensis*. The latter apparently differs little from the foreign *C. cretica*, resembling it in habit and character of the inflorescence. The generic description and figure in Engler and Prantl's *Nat. Pflanz.* 4:15 show the spicate or even nearly capitate character of the inflorescence which forms a great contrast to the raceme of *C. depressa*. The generic description in Benth. and Hook. *Gen. Pl.* 2:881 calls for the inflorescence as described by Engler and Prantl. The generic descriptions all show that the previously described species have filiform filaments, whereas *C. depressa* has remarkably dilated filaments.

Collected by the writer (no. 726) from the salt swamp along the Virgin River of southern Nevada.

Langloisia punctata (Coville).—*Navarretia setosissima punctata* Coville, Contrib. U. S. Nat. Herb. 4:154.

The distinctions between *L. punctata* and *L. setosissima* are well brought out by Dr. Coville, and in the light of his discussion, in connection with good specimens of *L. punctata* recently collected by the writer at Rioville, Nevada, it seems proper to raise it to specific rank.

Phacelia foetida, n. sp.—Densely glandular-hispid throughout,

light olive-green, 4–6^{dm} high, stout, erect, from a biennial root: leaves oblong, deeply toothed and occasionally slightly lobed; the lowermost short-petioled, 5–8^{cm} long, densely tufted about the base; the upper sessile and numerous along the stem: inflorescence a dense spicate thyrus 1–2^{dm} long, composed of short dense scorpioid cymes (occasionally compound cymes at base): flowers sessile: sepals clavate, 4–5^{mm} long: corolla white or cream colored, narrowly campanulate, 5–7^{mm} long, slightly hispid without, the lobes short (1^{mm} long), ovate, obtuse: anthers ovate-oblong; filaments slender, exerted half their length, inserted low down in the corolla tube; appendages ovate, obtuse, united at the base of the filaments: style 2-cleft two-thirds its length: capsule globose, slightly 4-lobed, short glandular-pubescent, 4-seeded.

The above species seems sufficiently distinct from all other species of *Phacelia* to require no explanatory notes. It grows in the lava fields of southern Utah, where it was collected by the writer. It is characterized by a deathly sickening odor which may account for the fact that apparently it has not been collected or described before.

PHACELIA PALMERI Torr., Watson, Bot. King 251.—*P. integrifolia Palmeri* Gray, Syn. Fl. 2:160.

From a recent collection, made by the writer, at Kernan, Nevada, of *P. Palmeri*, it seems proper that the plant should stand as a species. *P. integrifolia* has entire crenately-toothed leaves, whereas *P. Palmeri* is deeply sinuately lobed and the lobes sinuately toothed. The former also has long exerted stamens, while the stamens of the latter are shorter than the corolla. There is also a marked difference in the internal appendages of the two species.

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